CONNECTING THE HUMAN DIMENSION OF HAZARDS AND DISASTERS

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University of Colorado Boulder

University of Colorado Boulder

NSF Award #1635593

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Thank you !
NAPSG Foundation

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The Natural Hazards Center

1. Translating and Sharing Information

2. Facilitating Connections

3. Training and Mentoring the Next Generation

4. Advancing New Social Science and Interdisciplinary Knowledge

https://hazards.colorado.edu/

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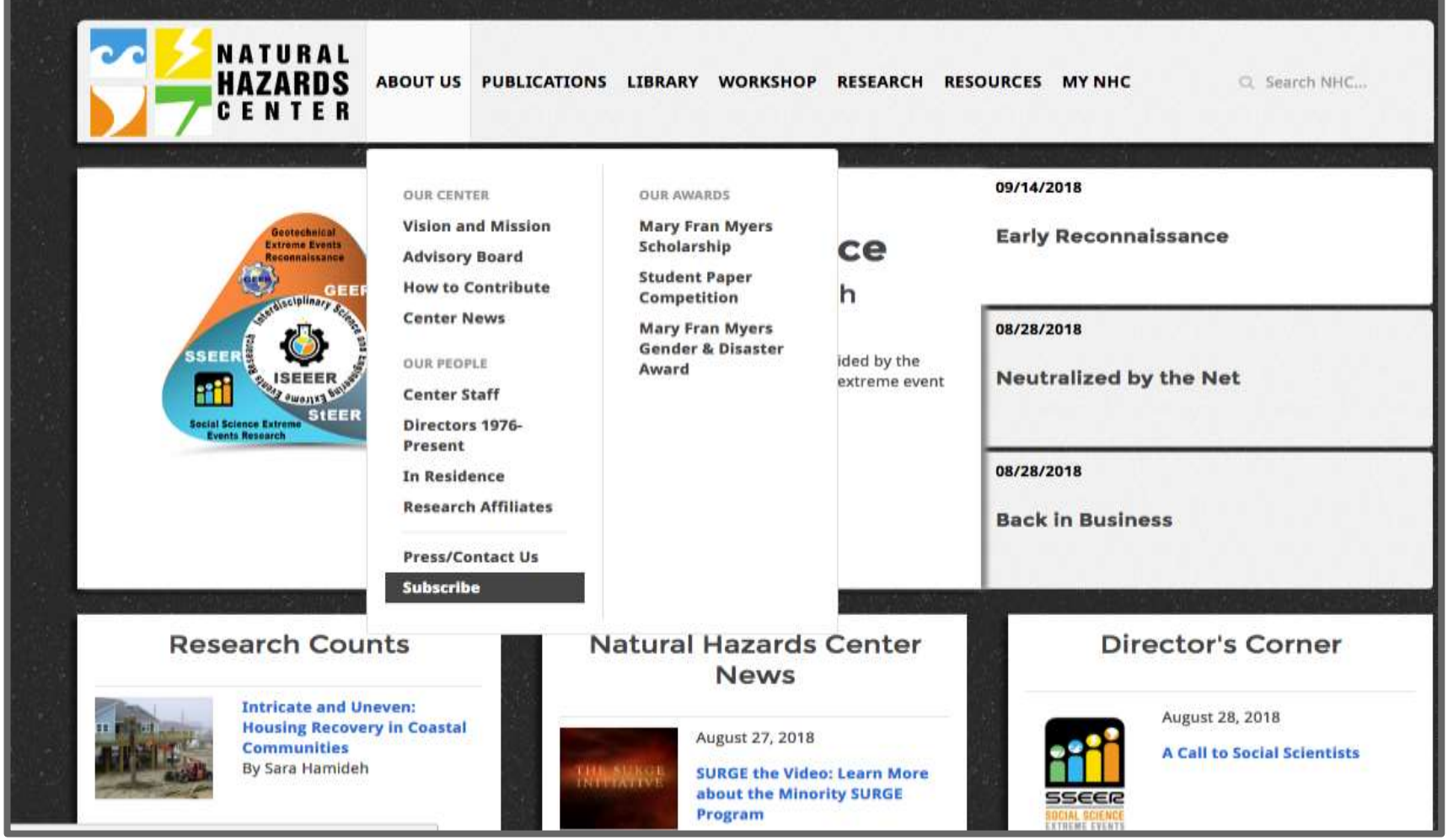
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Director's Corner
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A Call to Social Scientists
SSEER
SOCIAL SCIENCE EXTREME EVENTS

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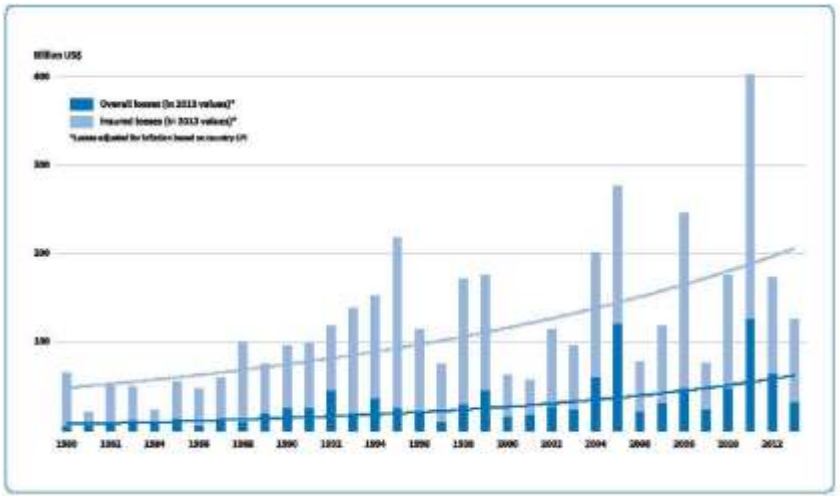
Award 1841338

CONVERGE – headquartered at the Natural Hazards Center – is a new **N**ational **S**cience **F**oundation-**N**atural **H**azards **E**ngineering **R**esearch **I**nfrastructure (**NSF-NHERI**) facility dedicated to:

- ✓ ***linking*** social science, engineering, and interdisciplinary research communities through networks and research platforms;
- ✓ ***developing*** and ***sharing*** best practices for the ethical conduct of research;
- ✓ ***enhancing*** *and* ***promoting*** social science, engineering, and interdisciplinary natural hazards research to reduce vulnerability.

What is Convergence?

- Convergence research is often driven by a specific and compelling problem.
- It *requires the integration of knowledge, theories, methods, and expertise from different disciplines* to achieve scientific breakthroughs that otherwise would not be possible.



Problem → **Breakthrough**

See: National Research Council, https://www.nap.edu/catalog/18722/convergence-facilitating-transdisciplinary-integration-of-life-sciences-physical-sciences-engineering

National Science Foundation, https://www.nsf.gov/od/oia/convergence/index.jsp

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CONVERGE represents *a coming together*—for the first time—of NSF-**E**xtreme **E**vents **R**econnaissance (EER) networks and **NHERI** facilities designed to support those efforts.

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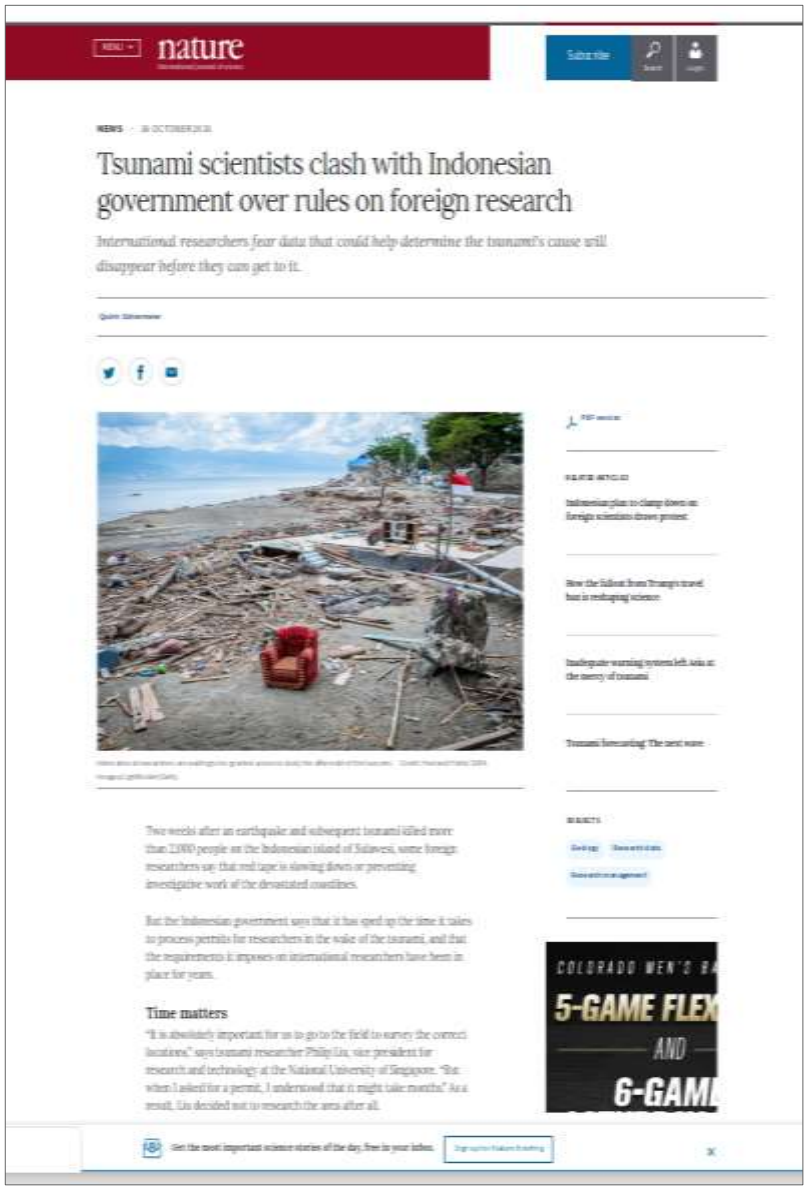
Why CONVERGE?



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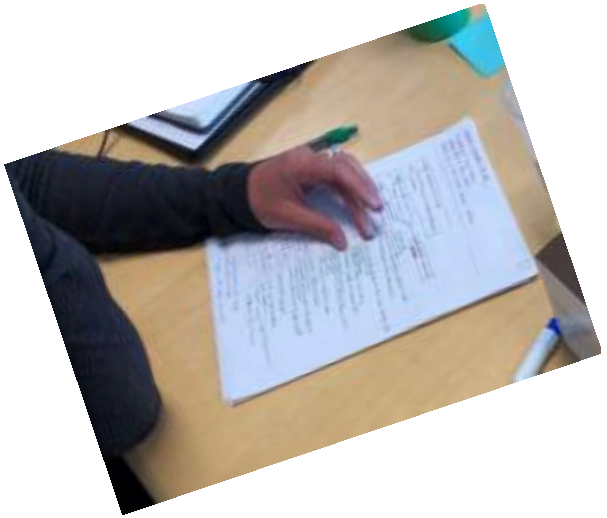
Post-Disaster Research

Contributions

Challenges



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Post-Disaster Research

Contributions

Challenges

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Post-Disaster Research

Contributions

Challenges

- Who sets the post-disaster research agenda?
- Who benefits from the knowledge produced?
- Methodological and ethical critiques:
  - Overemphasis on acute onset, large-scale events.
  - Lack of identification and coordination of researchers.
  - Exclusion of local researchers.
  - Focus on perishable data collection leaves little time to understand local cultures, norms, and policies.
  - Problems with duplication, and not enough scientific replication.

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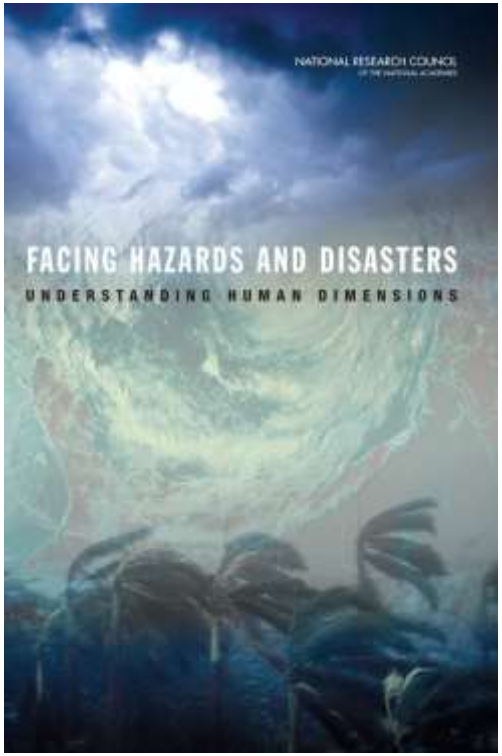
How many social science hazards and disaster researchers are there?



"The **size and composition of the hazards and disaster workforce** will significantly determine the extent to which the social sciences, in general, can respond forcefully to **twenty-first century demands** for basic social science knowledge and its application… The committee ***does not have a precise accounting*** **of the numbers of social scientists from respective disciplines currently engaged in hazards and disaster research**. Neither government agencies nor professional associations systematically collect data on this research workforce…" (NRC, 2006, pp. 317, 320, *emphasis added*).

SSEER SOCIAL SCIENCE EXTREME EVENTS RESEARCH

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- How many social science hazards and disaster researchers are there?
- **Where** are these researchers located?

SSEER SOCIAL SCIENCE EXTREME EVENTS RESEARCH

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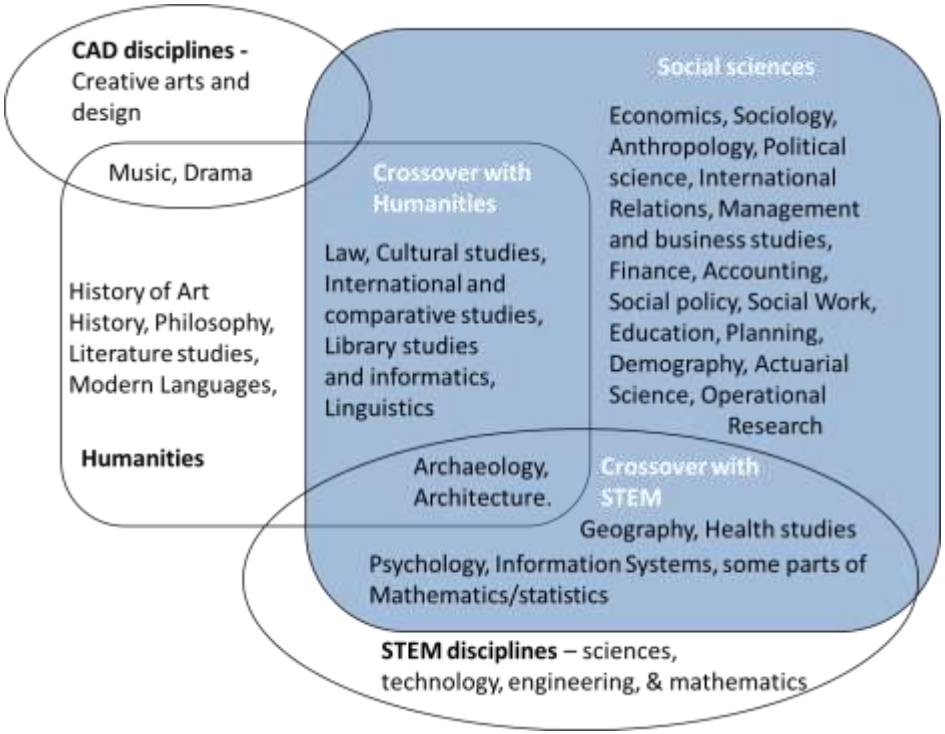
- How many social science hazards and disaster researchers are there?
- Where are these researchers located?
- **What disciplines** do they represent and what is their **topical and methodological expertise**?



SSEER SOCIAL SCIENCE EXTREME EVENTS RESEARCH

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- How many social science hazards and disaster researchers are there?
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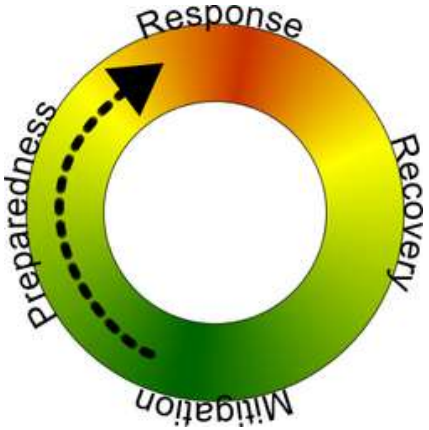
- What **phases of the disaster lifecycle** and what **disasters** have they studied?



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SOCIAL SCIENCE
EXTREME EVENTS
RESEARCH

- How many social science hazards and disaster researchers are there?
- Where are these researchers located?
- What disciplines do they represent and what is their topical and methodological expertise?
- What disasters have they studied?
- What is the **demographic composition** of the research workforce?

census

Phone Book

A Location Strategy: Addressing Key Business Functions

SSEER is a NSF-supported network and online platform for **social science** hazards and disaster researchers.

The mission is to:

1) ***identify*** and ***connect*** social science researchers to one another, to interdisciplinary teams, and to communities at risk to and affected by hazards and disasters

2) ***amplify*** *and* ***advance*** social science hazards and disaster research

SSEER
SOCIAL SCIENCE EXTREME EVENTS RESEARCH

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The form to **join SSEER** has been live since July 2018:
hazards.colorado.edu/join-SSEER

hazards.colorado.edu/news/director/a-call-to-social-scientists

How many social science hazards and disaster researchers are there?*

***as of October 30, 2018; this is not a complete census**

SSEER
SOCIAL SCIENCE
EXTREME EVENTS
RESEARCH

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- How many social science hazards and disaster researchers are there?
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SSEER SOCIAL SCIENCE EXTREME EVENTS RESEARCH

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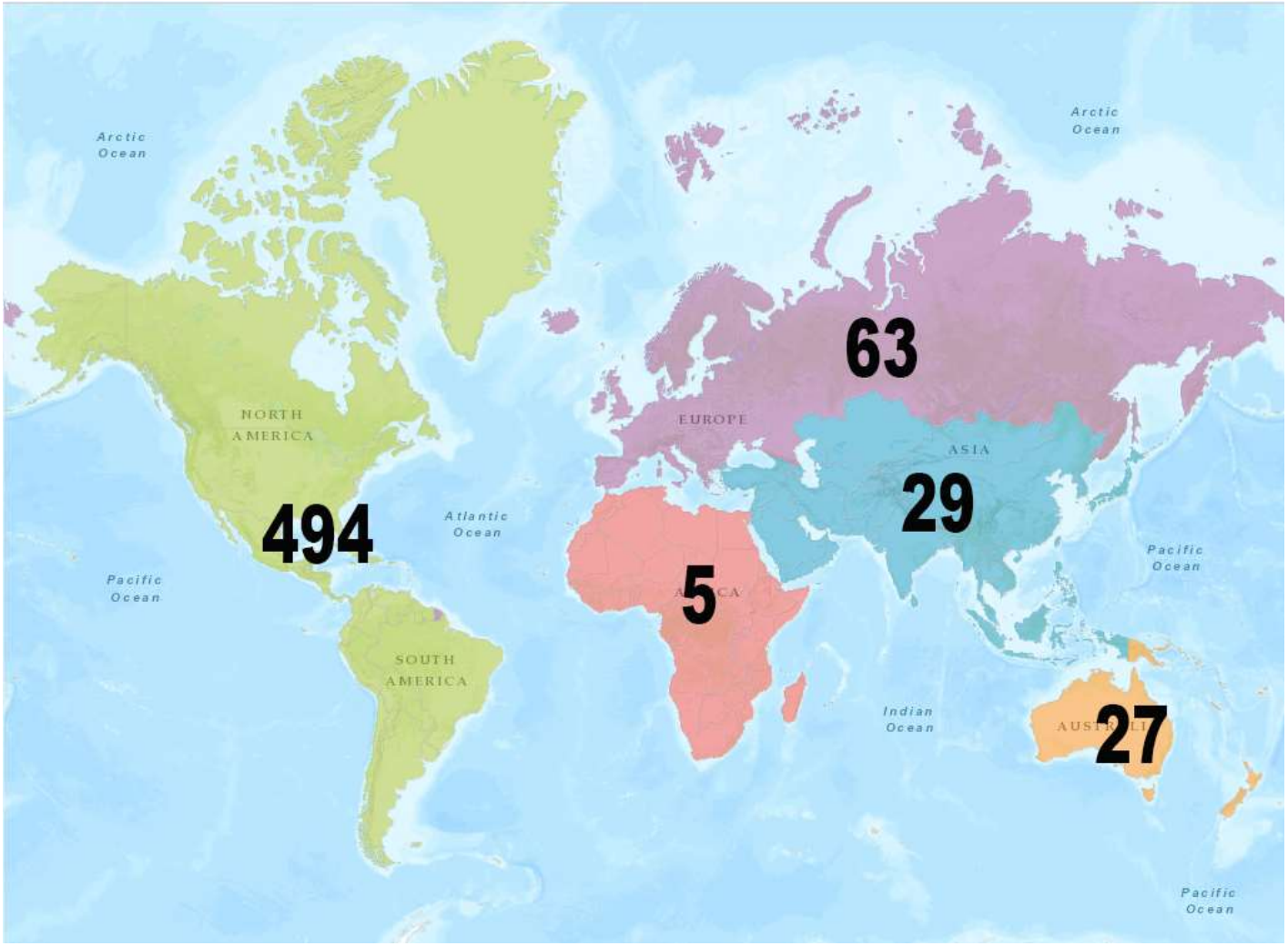
The SSEER Census: 618 respondents, by UN Region [as of October 30, 2018]



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SSEER Researchers by 7 UN Regions

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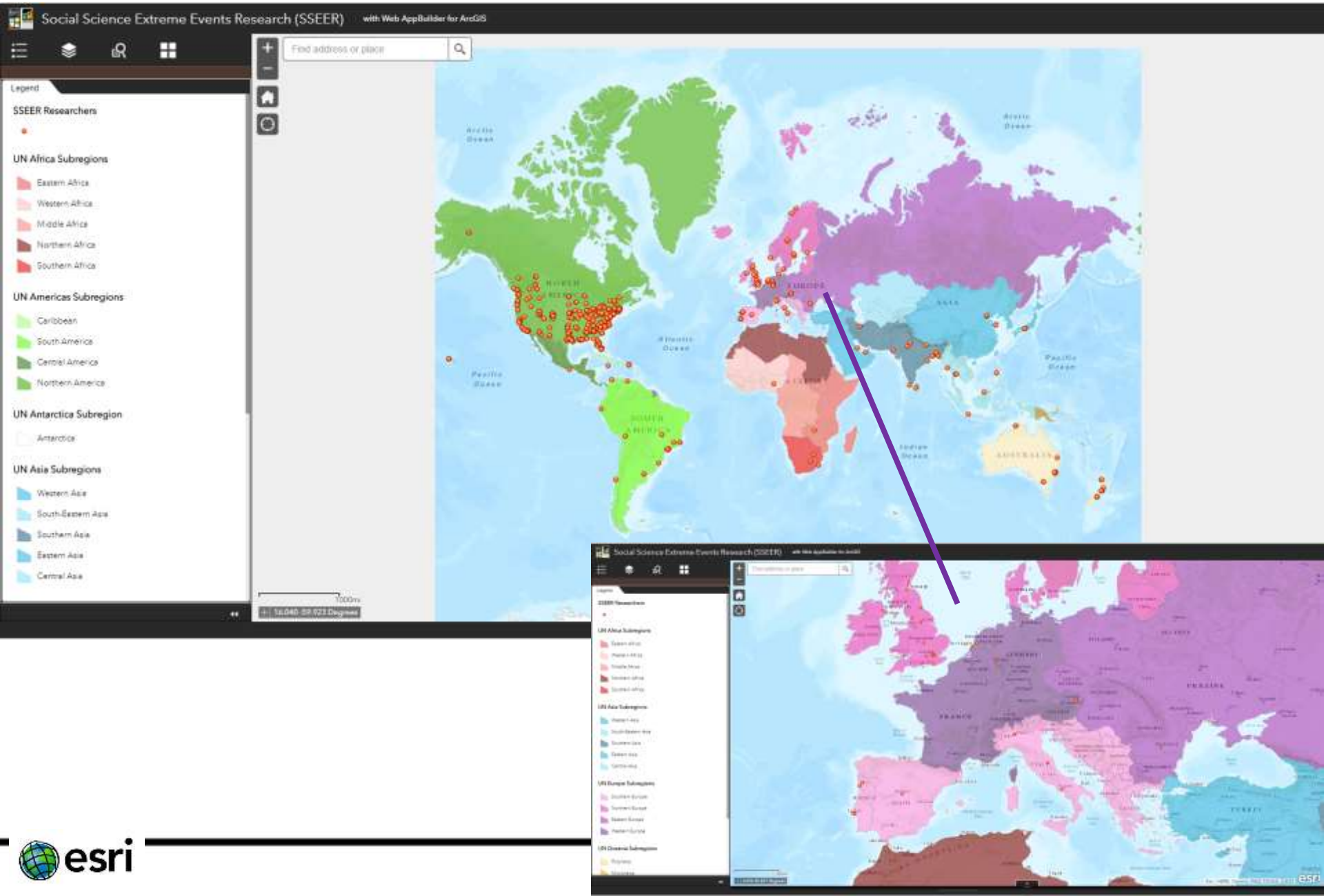
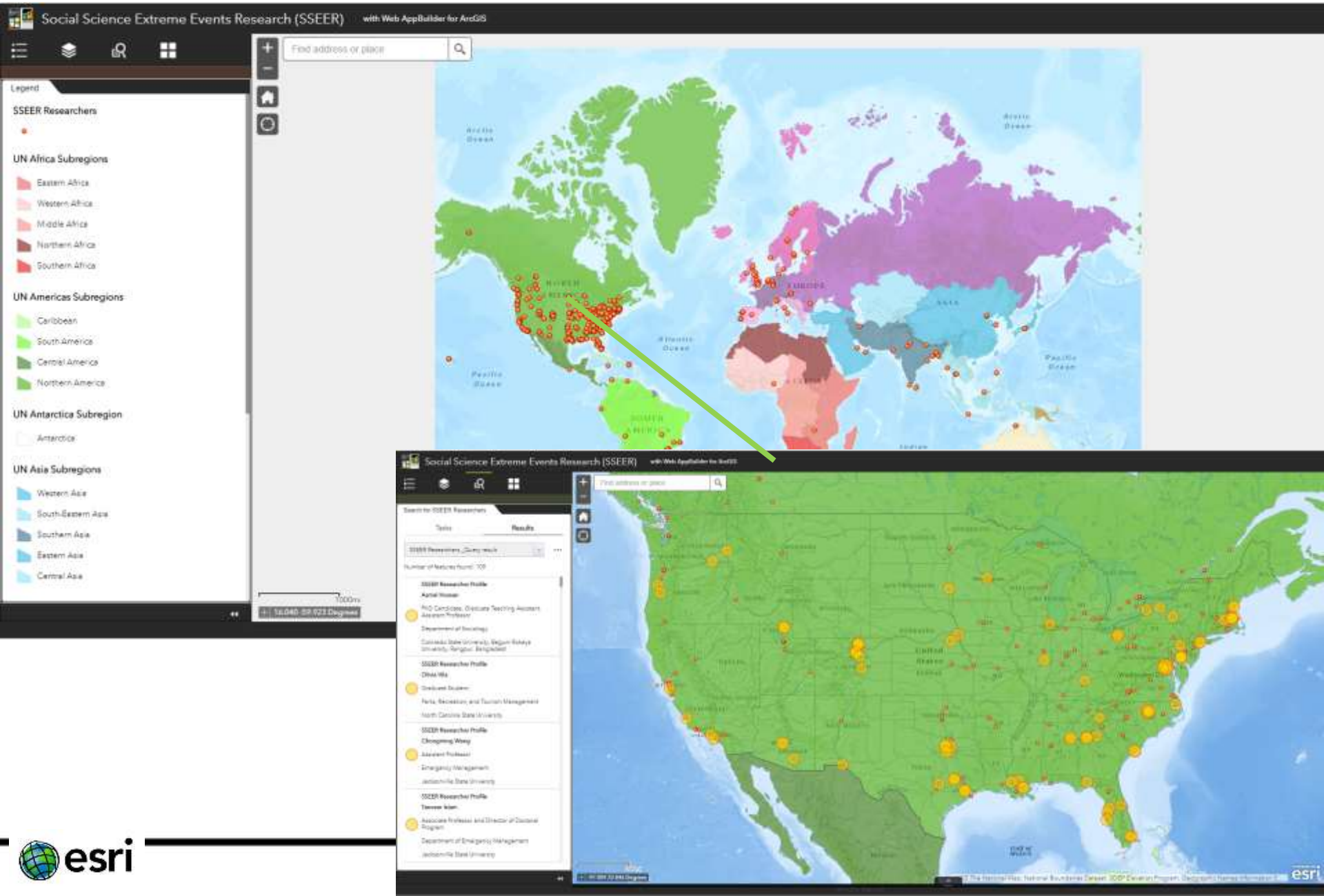
SSEER Researchers by 24 UN Subregions



SSEER Researchers by Nation



- ☑ How many social science hazards and disaster researchers are there?
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- ☑ **What disciplines** do they represent and what is their **topical and methodological expertise**?

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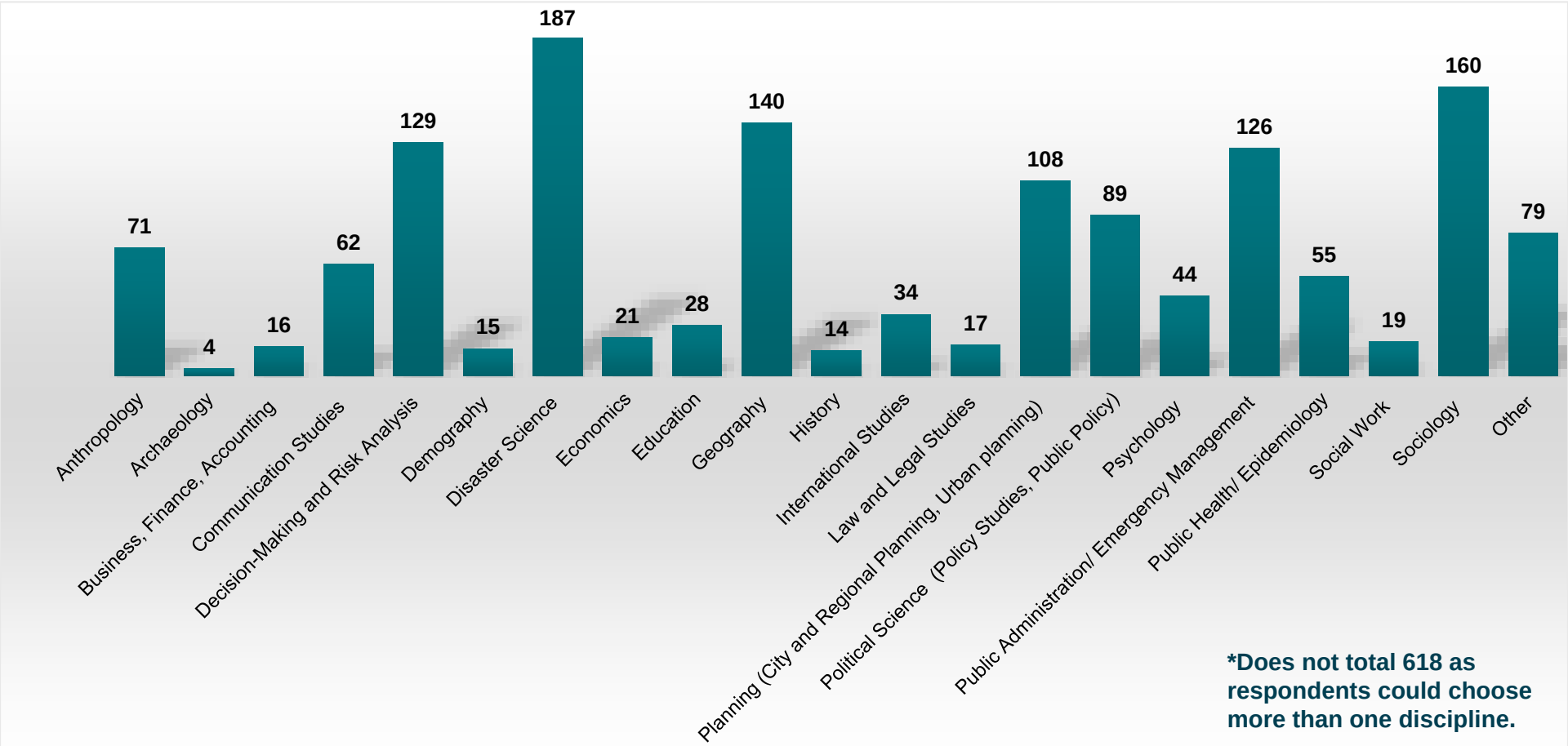
The SSEER Census:

Primary Social Science Discipline*



*Does not total 618 as respondents could choose more than one discipline.

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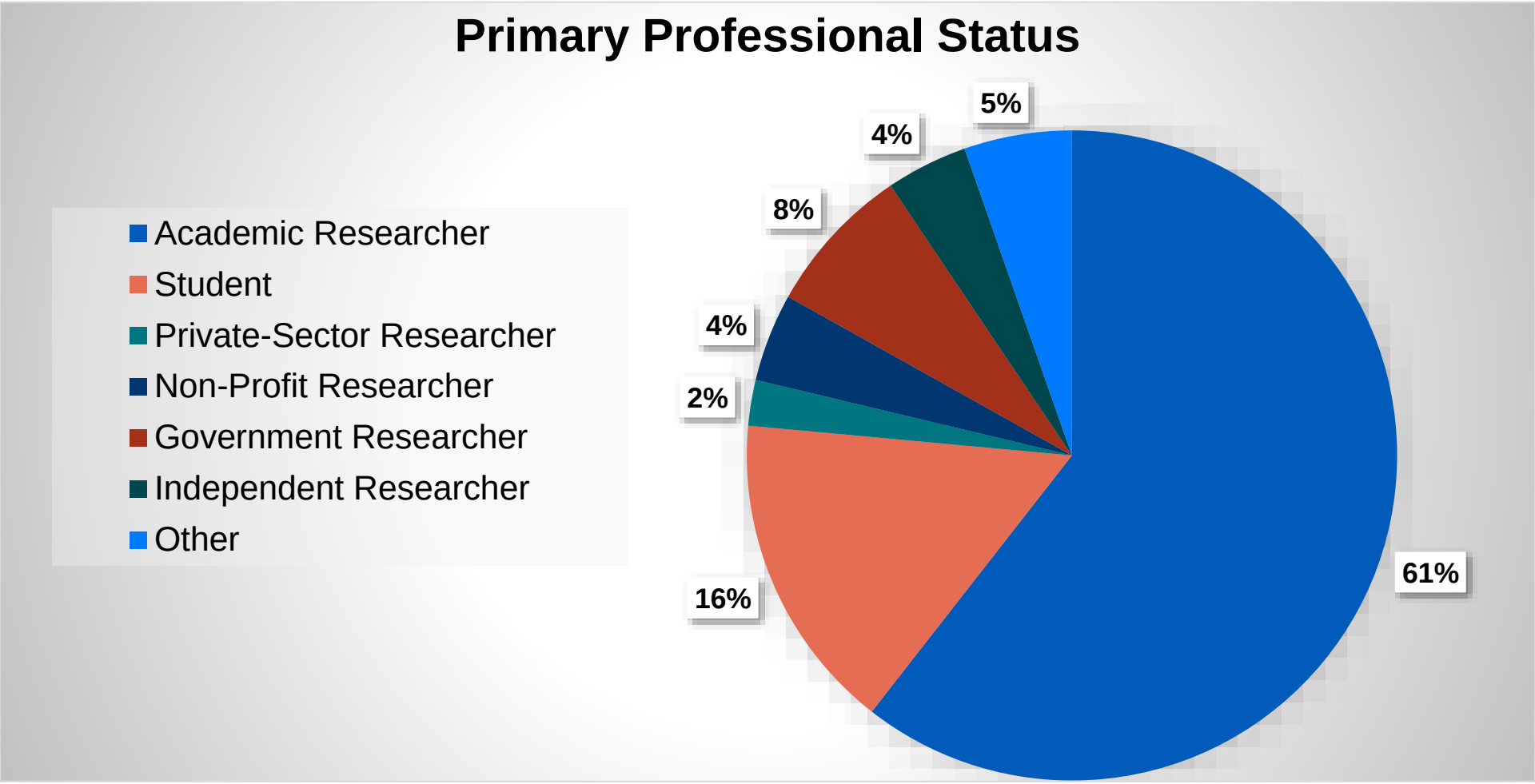
The SSEER Census:



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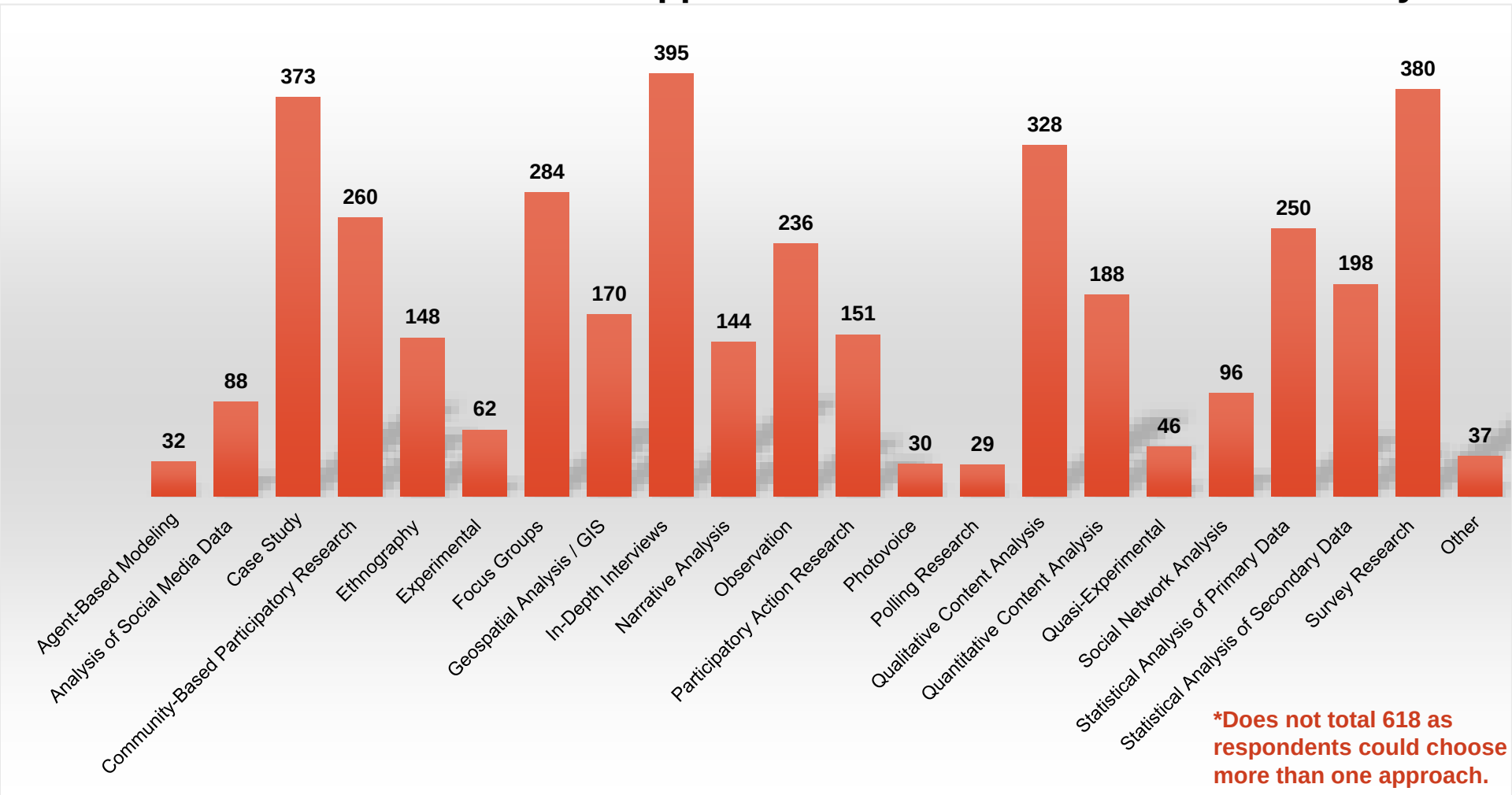
The SSEER Census:

Approaches to Data Collection and/or Analysis*



*Does not total 618 as respondents could choose more than one approach.

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The SSEER Census:

Areas of Expertise

Top 10 Areas

- ✓ Community Resilience
- ✓ Social Dimensions
- ✓ Vulnerability Reduction
- ✓ Disaster Recovery
- ✓ Risk Communication
- ✓ Emergency/Risk Management
- ✓ Disaster Preparedness
- ✓ Climate Change
- ✓ Risk Analysis
- ✓ Disaster Mitigation
- ✓ +100s more

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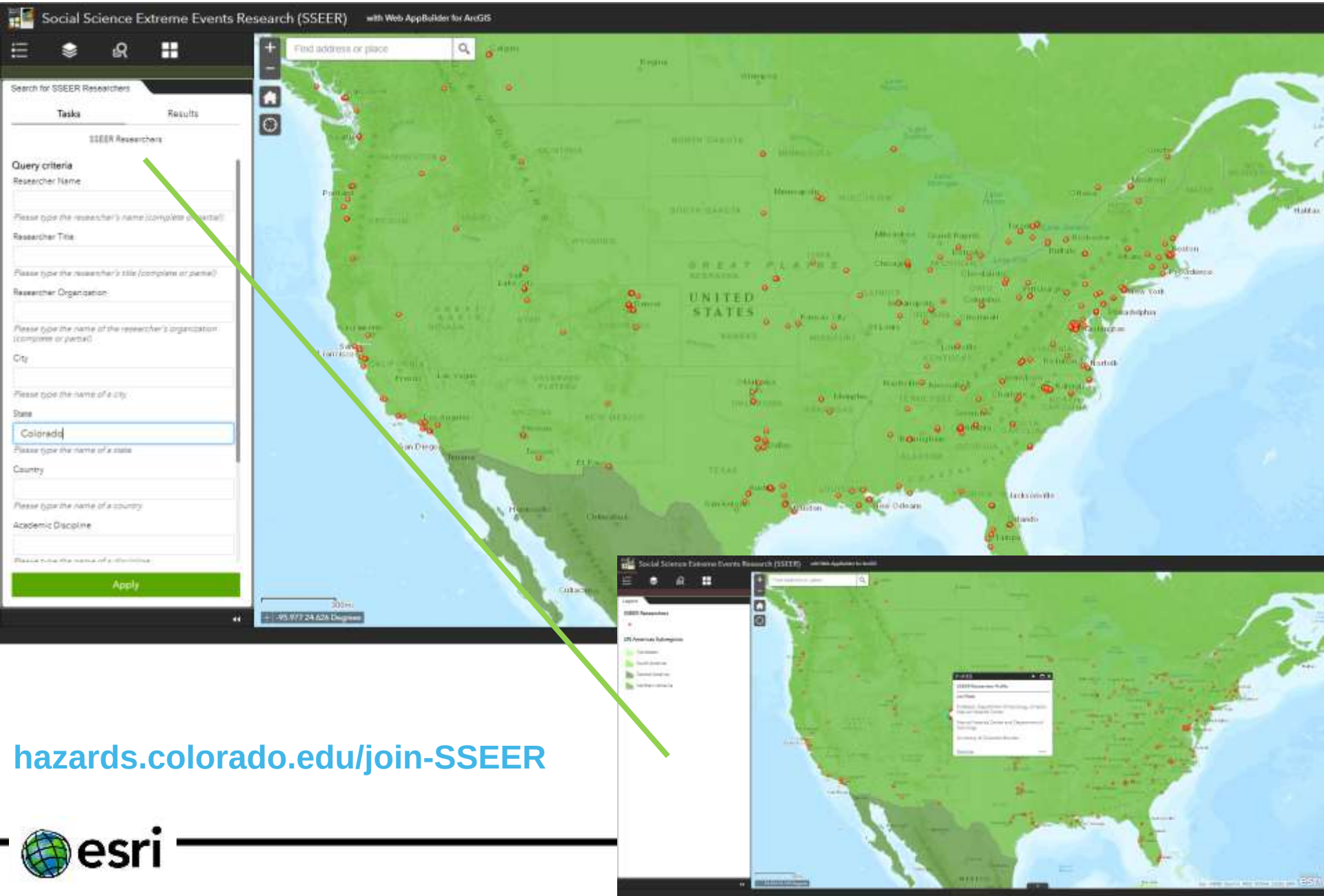
Searching for SSEER Researchers + Individualized Researcher Profiles



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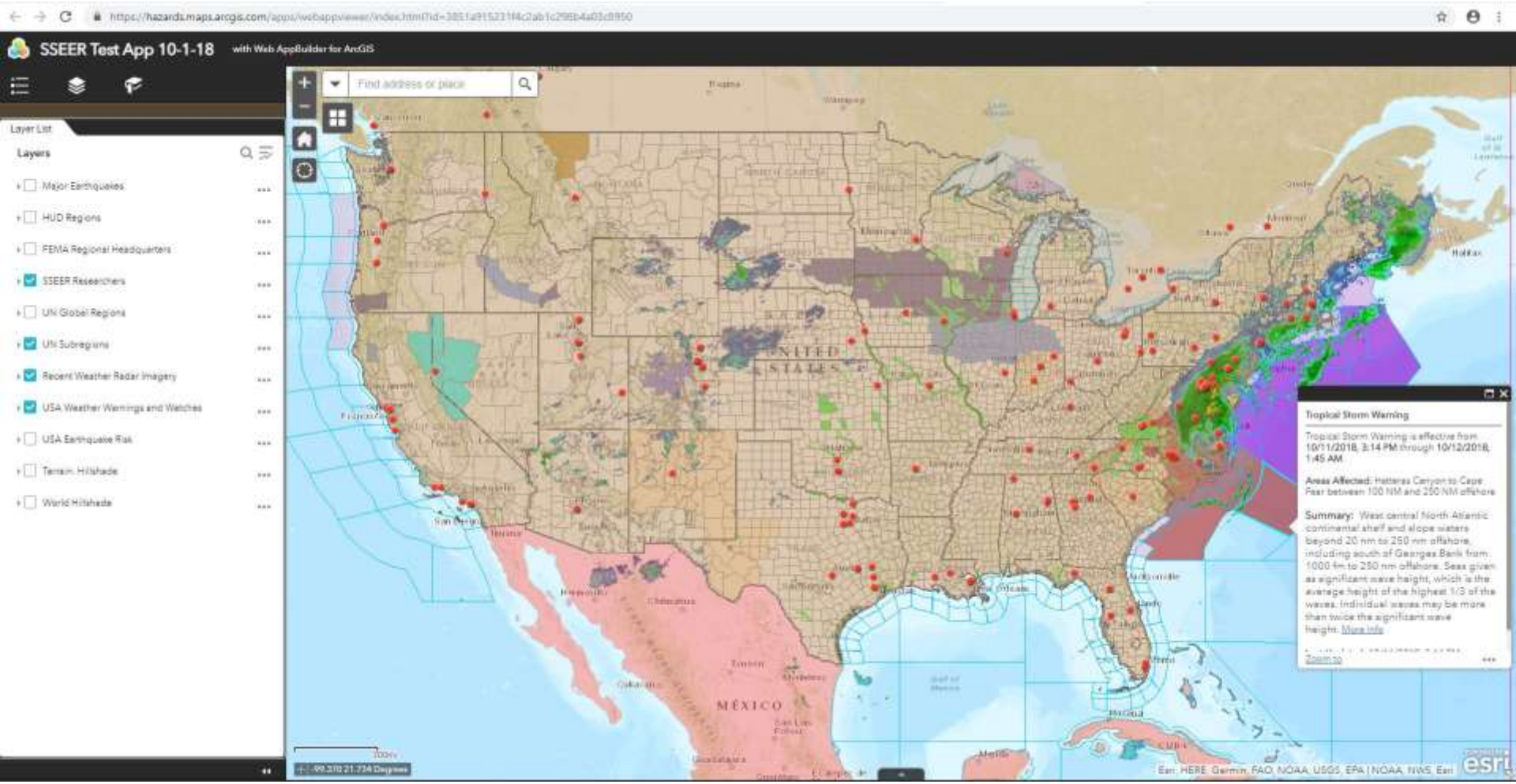
Examples of How to Use the SSEER Maps + Disciplinary Expertise for Research Purposes

Using the SSEER Map, Real Time w/ Current Weather



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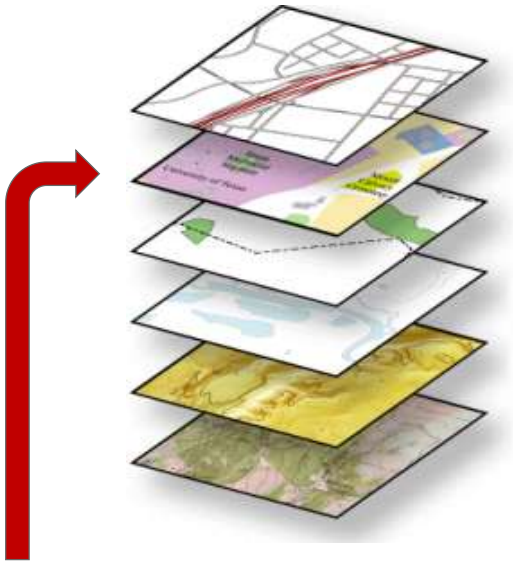
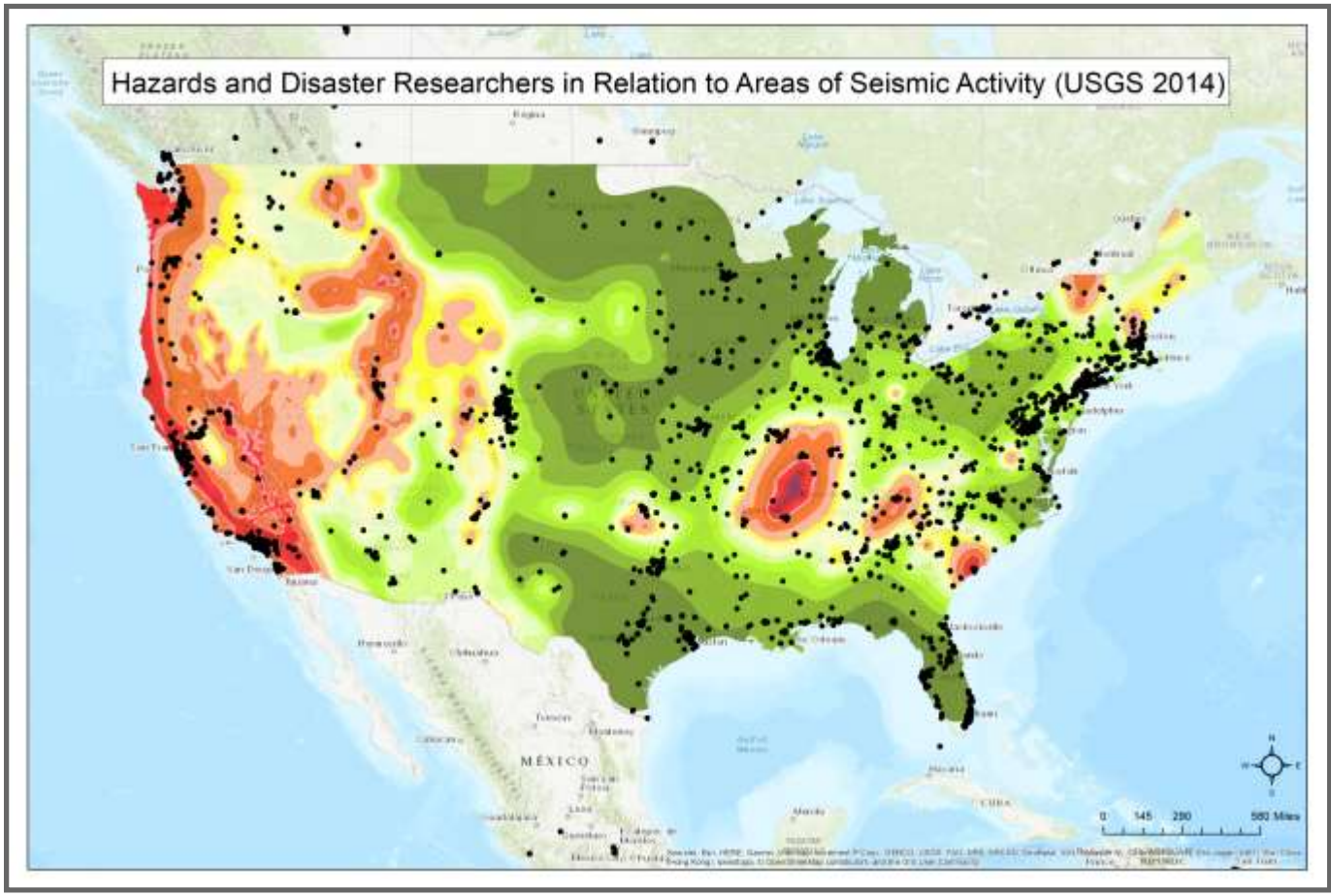
Using the SSEER Map w/ Areas of Hazards Risk

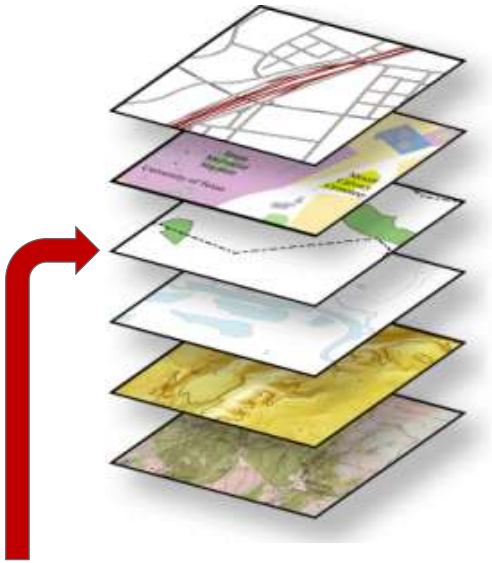


Natural Hazards Areas of Occurrence and Risk

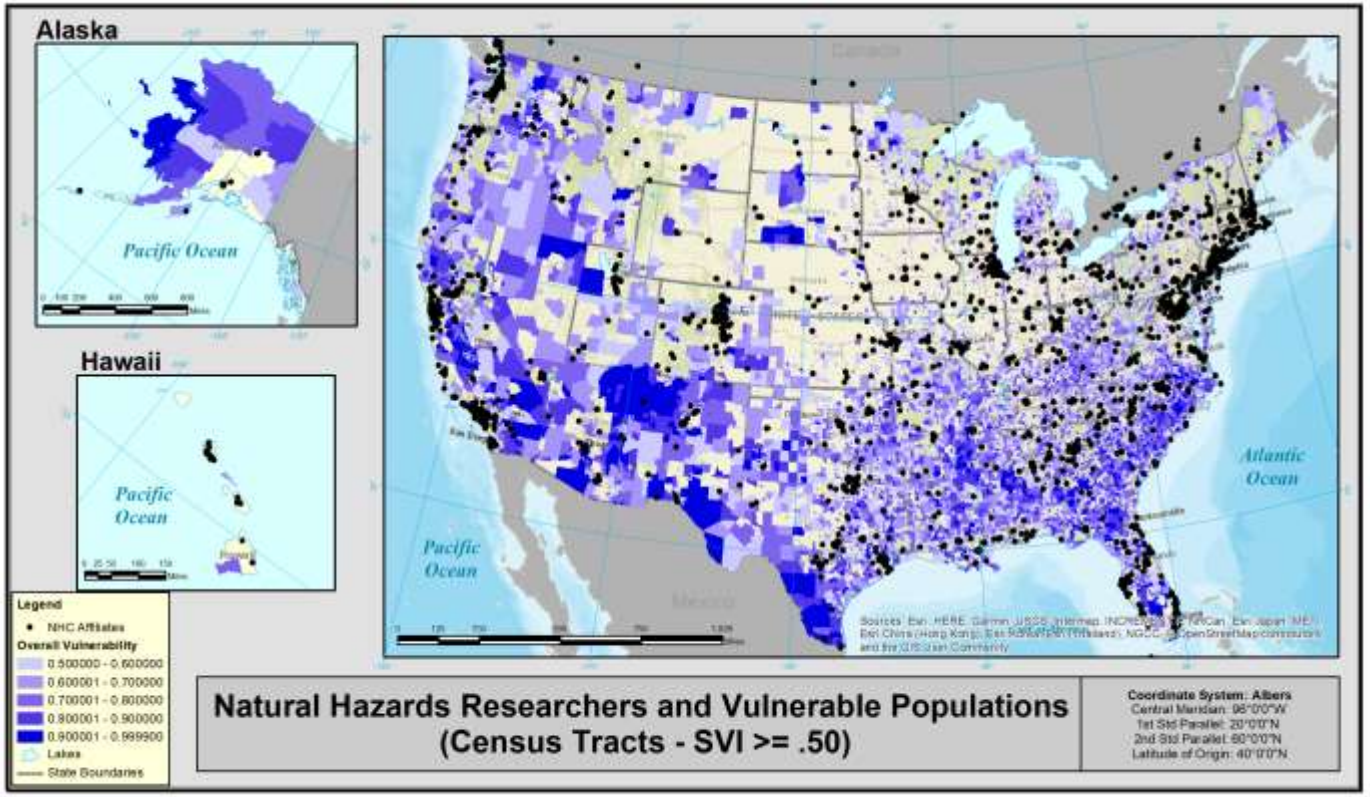


RQ: What is the spatial relationship between hazards and disaster researchers and zones of risk for different types of hazards? Not just earthquakes, could be flood zones, tornado alley, etc.

Using the SSEER Map w/ CDC Social Vulnerability Data



Location of Vulnerable Populations at Risk from Hazards and Disasters



RQ: Where are hazards and disaster researchers in relation to the most vulnerable populations?

- ☑ How many social science hazards and disaster researchers are there?
- ☑ Where are these researchers located?
- ☑ What disciplines do they represent and what is their topical and methodological expertise?
- ☑ What **phases of the disaster lifecycle** and what **disasters** have they studied?

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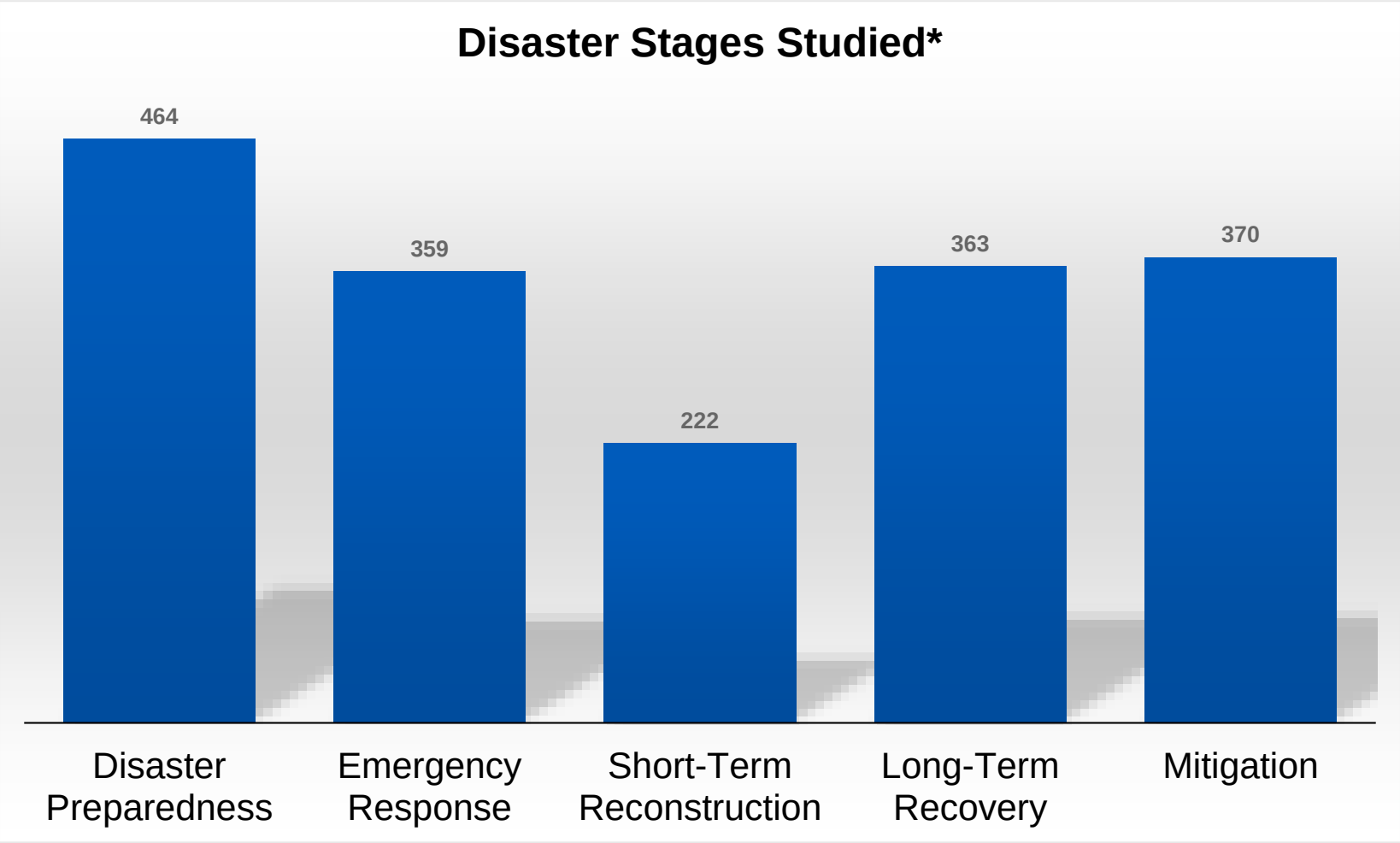
The SSEER Census:

*Does not total 618 as respondents could choose more than one stage.



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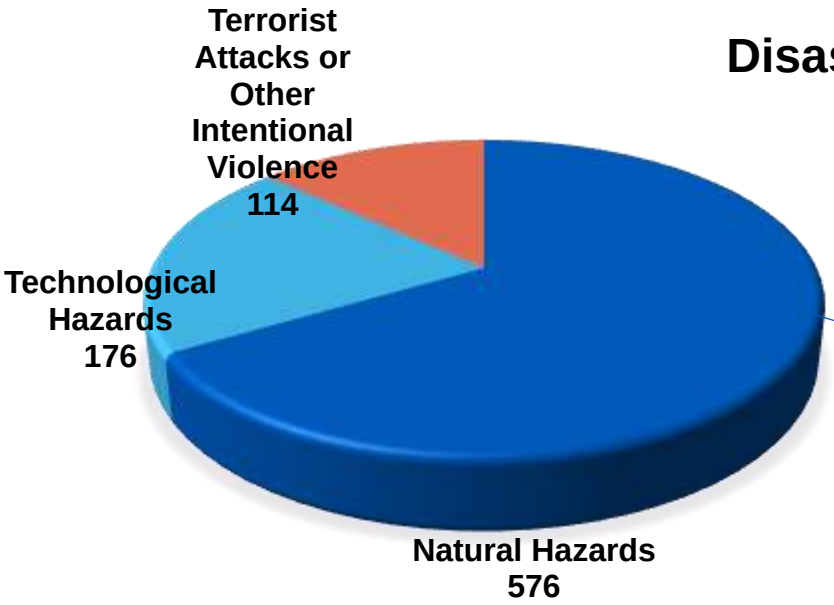
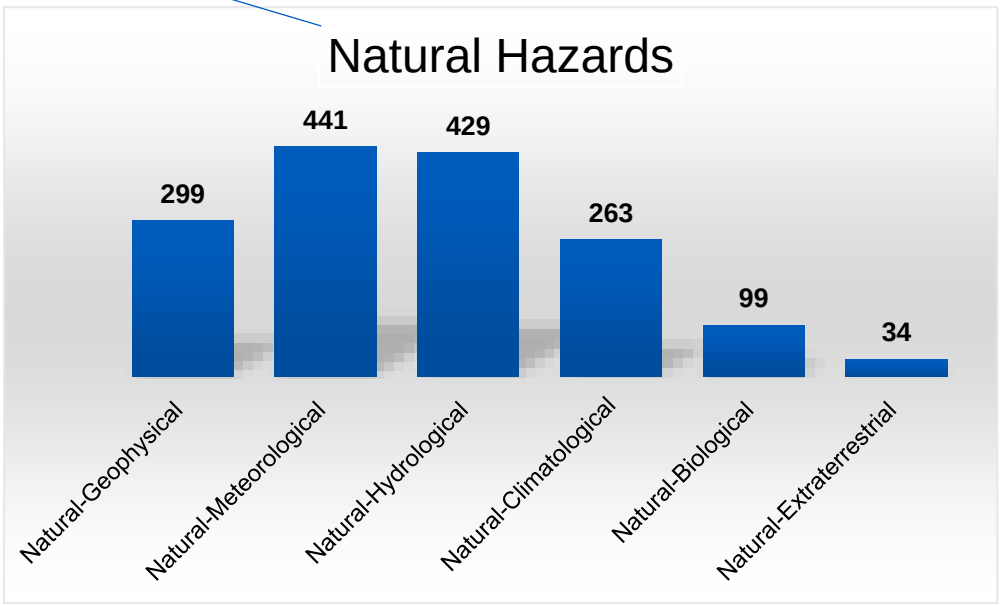
The SSEER Census:



Disaster Types Studied*



*Does not total 618 as respondents could choose more than one type.

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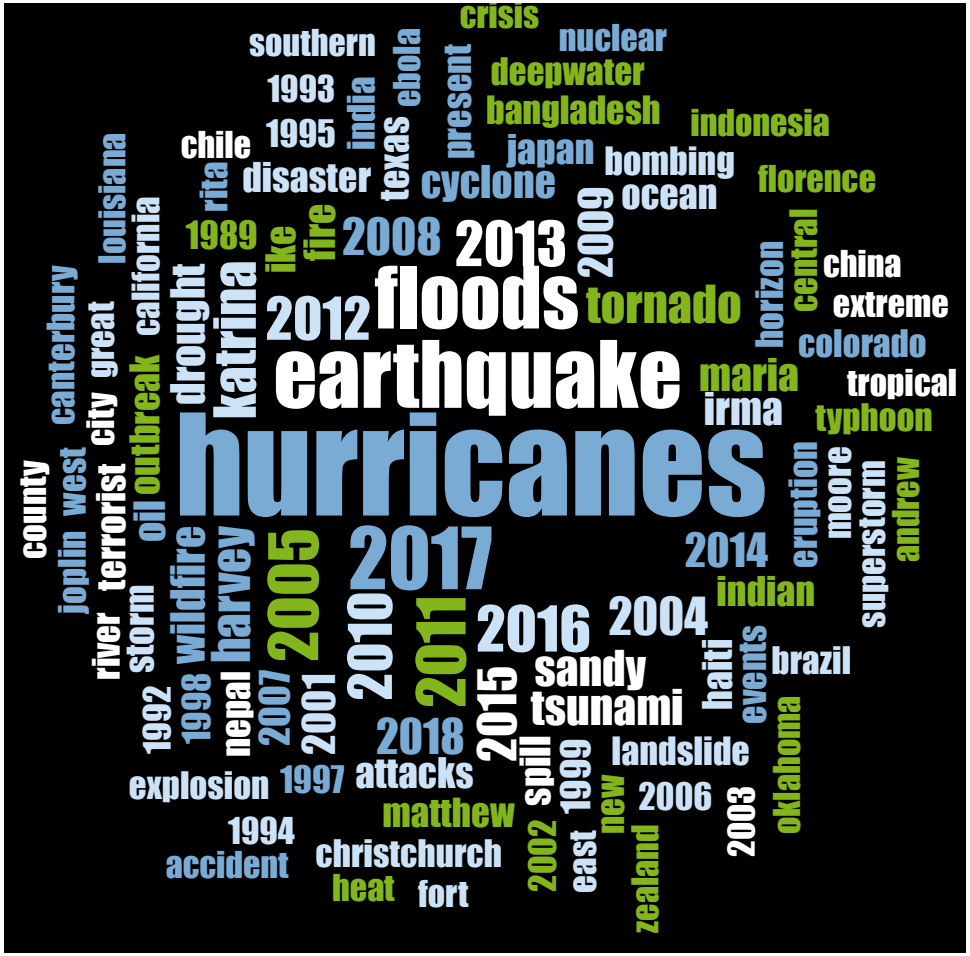
The SSEER Census:

Extreme Events Studied



Most Common Disaster Events Studied

- ✓ Hurricane Katrina 2005
- ✓ Hurricane Harvey 2017
- ✓ Hurricane Sandy 2012
- ✓ Hurricane Irma 2017
- ✓ Hurricane Maria 2017
- ✓ + 100s more

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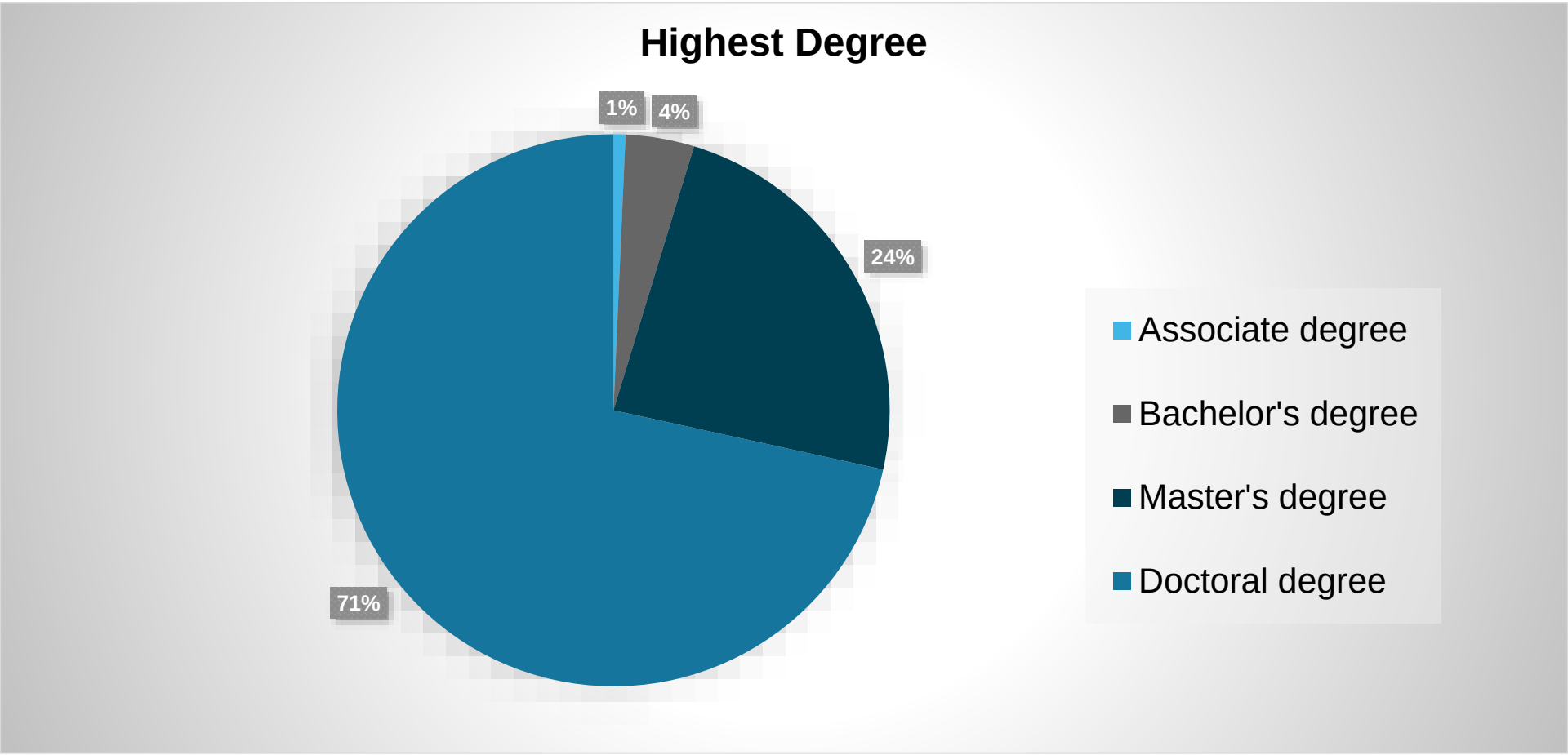
The SSEER Census – Demographic Information



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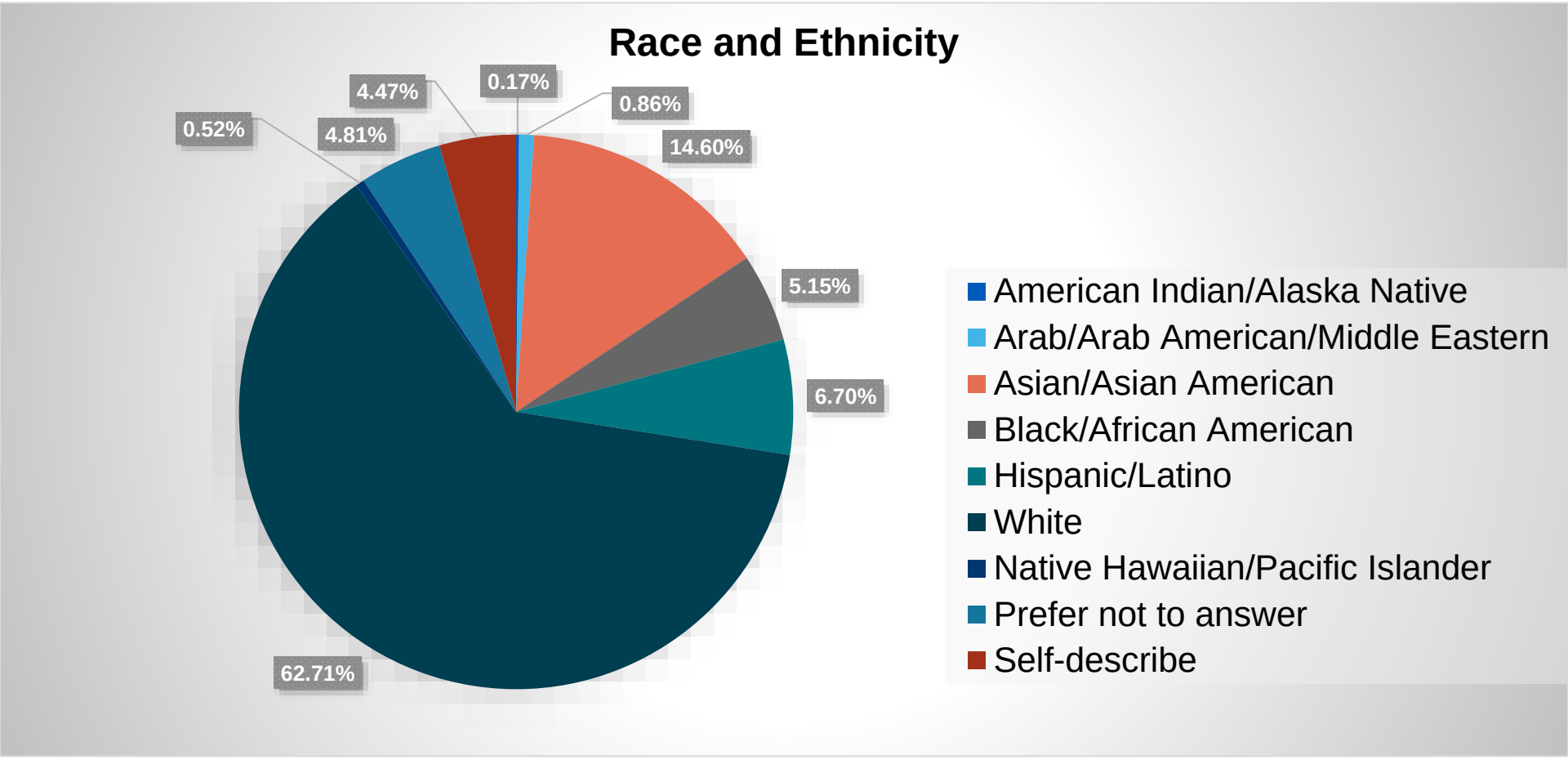
The SSEER Census – Demographic Information



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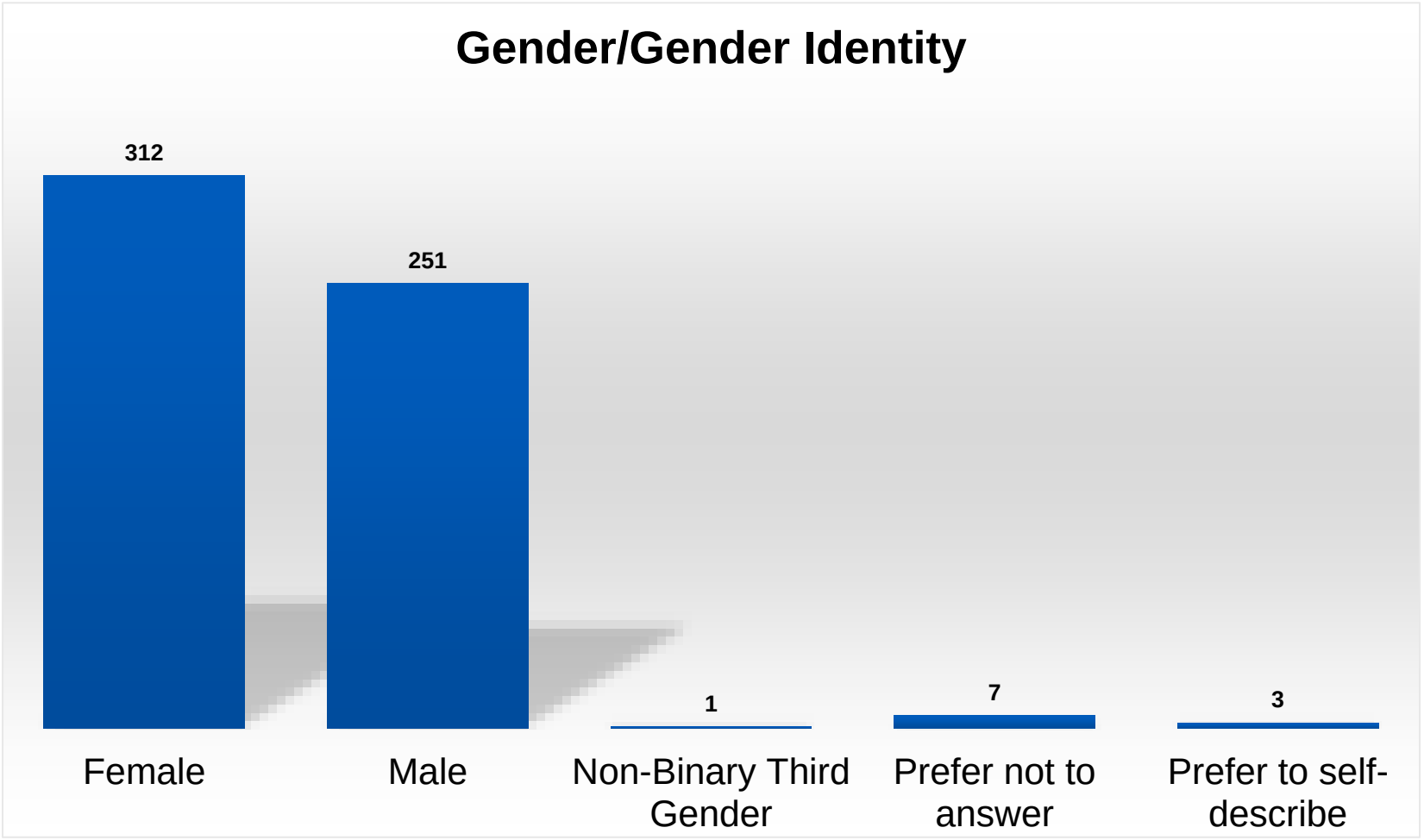

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The SSEER Census – Demographic Information

All researchers:

- Age range: **23** to **78** years-old
- Average age: **41.31** years-old
- Average of **10.1** years of research experience in hazards and disaster field

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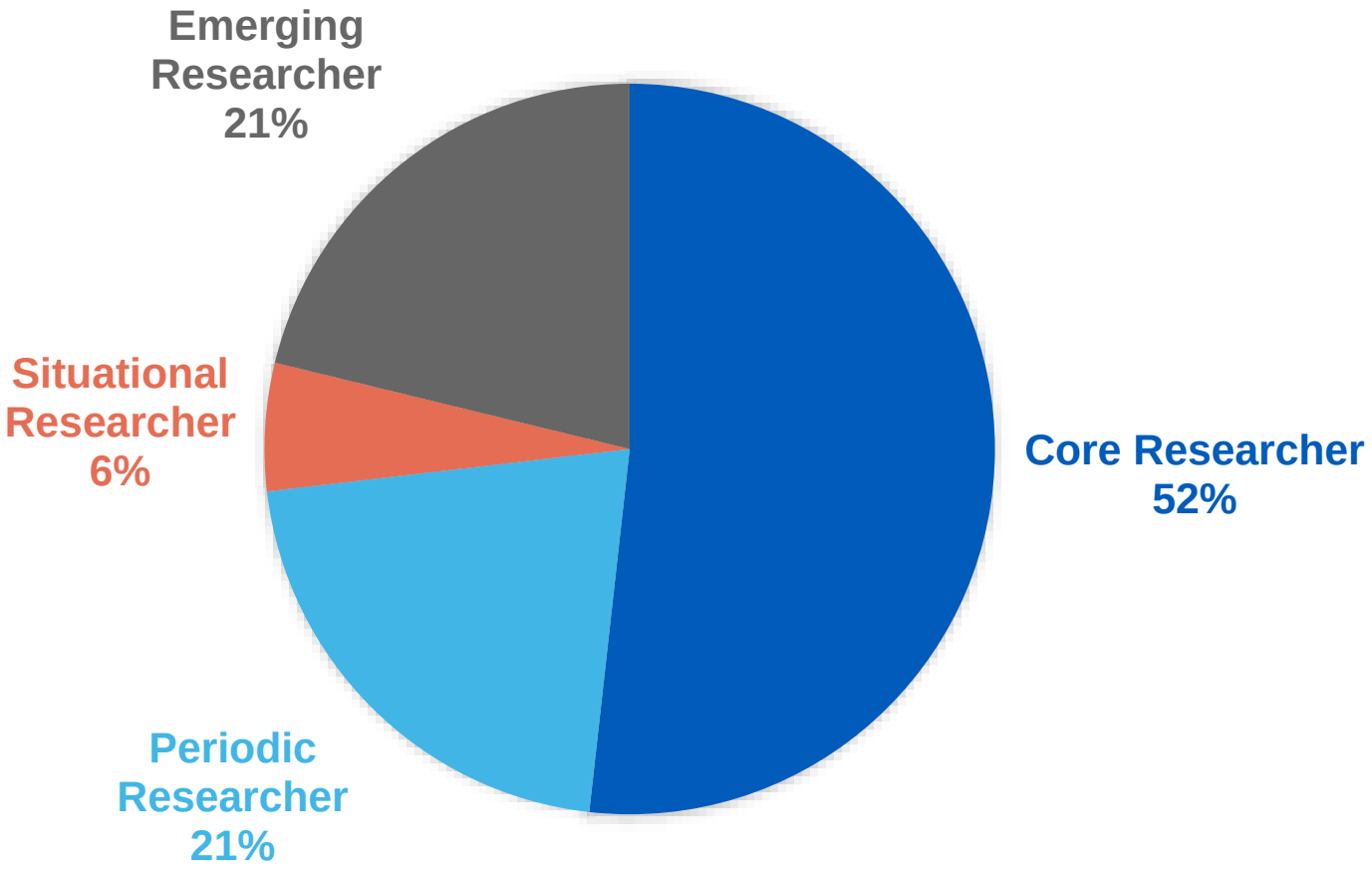
The SSEER Census:

Current Status as a Researcher



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Current and Future Visions

- Create a **novel, systematic database** and **maps**
- Work to **democratize the research and engagement process** before, during, and after disaster strikes
- Encourage more **effective cross-disciplinary collaborations** between researchers, practitioners, and policy makers
- Ensure that research is **holistic, rigorous, and ethically-grounded**
- Increase the **visibility** and **positive impact** of the social science hazards and disaster community by publicly *articulating who we are, what we know, and how we can use our knowledge and skills to reduce hazards and disaster losses*, especially among the most vulnerable people
- Advance a **social science hazards and disaster research agenda** grounded in concerns regarding **justice, equity, and risk reduction**

Thank you!

Lori Peek
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and
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Special thanks to the Natural Hazards Center team and especially **Mason Mathews, Haorui Wu, Jeffrey Gunderson, Emma Hines, Helen Gardner,** and **Jennifer Tobin**, who contributed to the analyses, maps, and other visuals included in this presentation.

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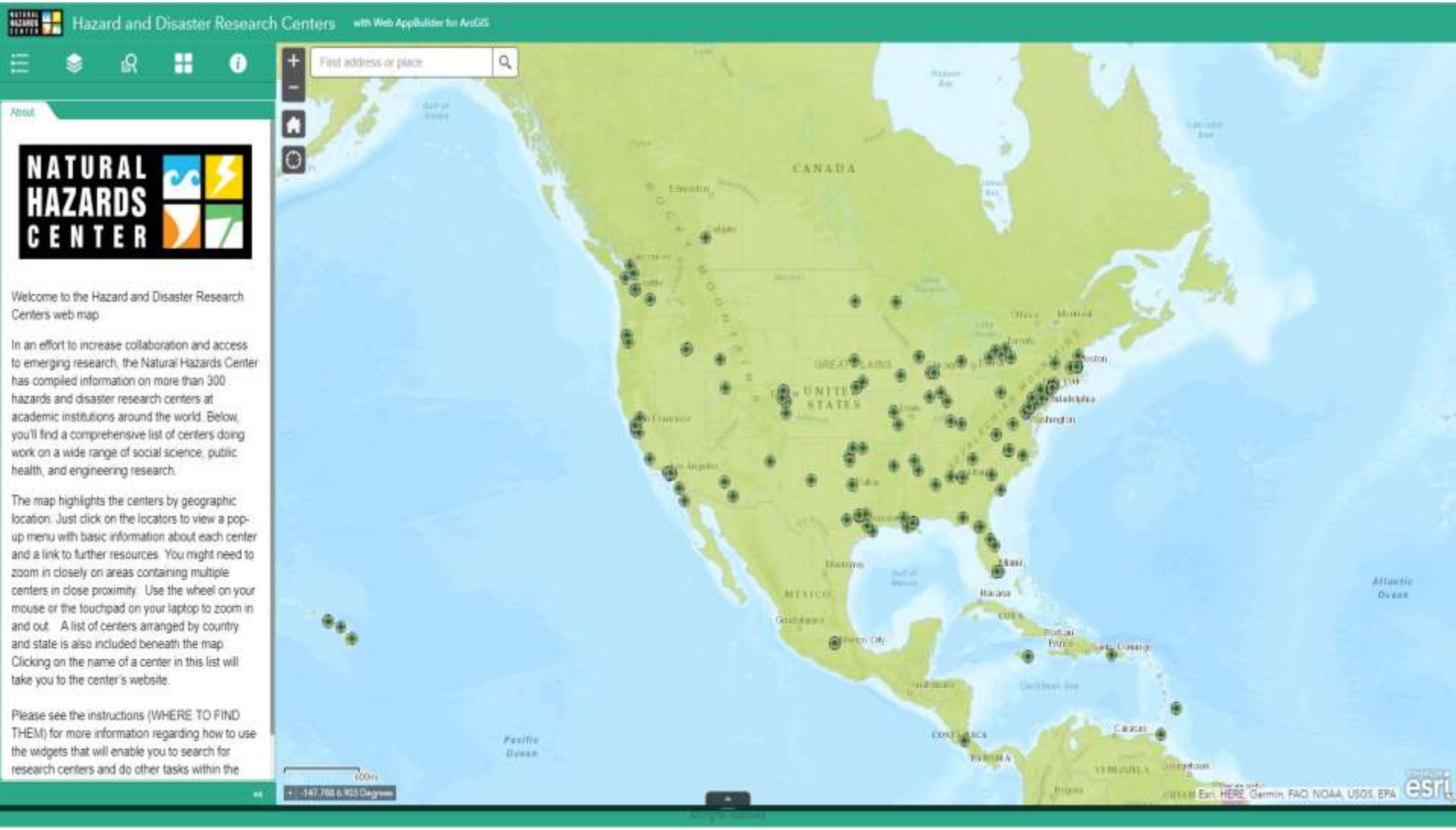

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